

REMARKS

I. Status of the Claims

Claims 1-24 were pending. Claims 3, 12, 15, 22, and 24 are cancelled herein. With entry of this amendment, claims 1, 8, 9, 13, 14, and 23 have been amended in order to overcome the grounds of rejection set forth in the previous official letter and to more particularly point out and distinctly claim the invention. Therefore, the following claims are presently pending in this application: 1-2, 4-11, 13-14, 16-21, and 23. Inasmuch as no new matter is introduced by the amendments, entry thereof is respectfully requested.

II. Duplicate Claims Warning

The Examiner advises that should claims 12/13 be found allowable, claims 22/23 will be objected to under 37 CFR as being a substantial duplicate. Applicant has revised the claims rendering this objection moot.

III. Claim Objections

The Examiner objects to claims 8, 9 and 13 due to typographical errors. Applicant has corrected these claims rendering this objection moot.

IV. 35 USC 112, Second Paragraph

Claims 1-11, 14-21, and 24 are rejected under 35 USC 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. As to claims 1 and 14 the Examiner objects to use of the phrase "chemical related". This objection is rendered moot by the revision provided herein. Support for the revision can be found for example, within the specification at page 4, lines 16-18. As to claim 24, this rejection is rendered moot by the cancellation of this claim.

V. 35 USC 102

The Examiner rejects claims 1, 5, 6, 12-14, 20, 22 and 23 as being anticipated by Kandemir. Applicants respectfully traverse this rejection. Kandemir discloses a bacterial leach, in which bacteria is the oxidant. The present invention does not use bacteria; rather the present invention discloses a complex of EDTA with a multivalent metal as the oxidant. A benefit of using an EDTA metal salt as the oxidant is that it does not oxidize thiosulfate, thus reducing losses of lixiviant. The examiner has stated that page 1; lines 54-59 indicate that the bacteria do

not oxidize the thiosulfate. This is not entirely correct; the document states that the bacteria oxidize sulphide to sulfate so as to release gold for dissolution. Kandemir focuses on the desirable activity of the bacteria, but there is no explicit teaching to say bacteria does not oxidize thiosulfate. The reason that thiosulfate oxidation is largely avoided in this system is because thiosulfate does not come into contact with the bacteria. The leaching process taught in Kandemir is a two-stage process wherein the bacteria are contacted with the ore to oxidize the sulphides and make the metal available for leaching. The bacteria are then removed (in the example of the heap leach the bacteria solution is drained from the heap) and then the reagent (thiosulfate) is applied separately. See for example, page 2, lines 1-5. Even if it can be construed that the bacteria does come into contact with thiosulfate, the document does not teach that thiosulfate is not oxidized, rather it is simply silent on the matter altogether. That is, the problem of thiosulfate oxidation is not identified. Furthermore, it should be noted that in Kandemir thiourea is used as a lixiviant (see page 6, line 24). Conversely, in the present application, thiosulfate **IS** the lixiviant, **NOT** thiourea. Thiourea is present in trace quantities as a catalyst. To further define the invention, claim 1 has been amended such that it specifies a complex of EDTA with a multivalent metal as the oxidant (e.g. not bacteria). Applicant asserts that claim 1 as presently amended is novel over the disclosure of Kandemir.

VI 35 USC 103

The Examiner rejects claims 2, 7, 18, and 19 under 35 U.S.C. § 103(a), as allegedly being unpatentable over Kandemir. Claims 3, 4, 9, 10, and 15-17 are rejected under 35 USC 103(a) as allegedly being unpatentable over Kandemir in view of Kenna. Claim 8 is rejected under 35 U.S.C. § 103(a), as allegedly being unpatentable over Kandemir in view of Kenna and further in view of *Hawley's Condensed Chemical Dictionary*. Claims 1-7 and 9-23 are rejected under 35 U.S.C. § 103(a), as allegedly being unpatentable over Thomas in view of Kenna. Claim 8 is rejected under 35 U.S.C. § 103(a), as allegedly being unpatentable over Thomas in view of Kenna and further in view of *Hawley's Condensed Chemical Dictionary*. The Applicant respectfully traverses.

Kandemir neither discloses nor suggests thiosulphate oxidation (and therefore loss of lixiviant). As stated, Kandemir is directed to bacterial leaching – the present invention is not related to bacterial leaching. The present invention **IS** related to a direct leaching process.

Bacterial leaching is often targeted at refractory ores that are not suitable for direct leaching (see Kandemir, page 1, lines 20-24). In both Kandemir and Kenna it is taught that thiourea is used as the lixiviant. Conversely, in the present invention, thiosulfate **IS** the lixiviant and thiourea is only present in trace quantities as a catalyst. It is not specifically taught that by Kandemir that thiosulfate must be used with thiourea. Kandemir focuses on thiourea as the preferred lixiviant, which may or may not be used in the presence of thiosulfate.

Thiourea is an organic compound. Thiosulfate is an inorganic compound. The fact that Kenna discloses that FeEDTA does not oxidize thiourea does not lead to the assumption that thiosulfate would not be oxidized. Sulfur chemistry is known to be very complex with different sulfur-containing compounds having vastly different properties. Therefore, one would expect such different sulfur containing compounds (thiourea vs. thiosulfate) to behave quite differently and would not conclude that FeEDTA would also be suitable for use with thiosulfate. Applicant maintains that a person skilled in the art would not combine Kandemir and Kenna because Kandemir refers to an indirect bacterial leach. Thus, Kenna does not teach that thiosulfate is a suitable lixiviant, not that FeEDTA would not oxidize thiosulfate, only thiourea is used.

Thomas teaches the known process of leaching gold ores in the presence of thiosulfate, copper and ammonia. The Examiner states that it would have been obvious to combine Thomas with Kenna because Kenna teaches that thiourea can be a suitable lixiviant. Thiourea is not considered to be a suitable lixiviant on a commercial scale because it is substantially more costly than thiosulfate.

A person of ordinary skill in the art would also not look to simply add thiourea to the leaching system as taught in Thomas, because thiourea should not be used at pH greater than 4. See for example the Kandemir disclosure at page 3, lines 5-7. Kenna specifically states that the leaching solution containing thiourea is acidic. Furthermore Kenna does not teach that thiourea, present in trace quantities with thiosulfate would assist with catalyzing (improving the leaching kinetics) of the gold half reaction in a thiosulfate system.

The Applicant maintains it would not be obvious to use FeEDTA in the presence of thiosulfate and expect a similar result for the same reasons as provided in Kandemir and/or Kenna. Thus for reasons such as the above, Applicant submits that neither Kandemir, Kenna, Thomas, nor *Hawley's Condensed Chemical Dictionary* alone or in combination teach the

invention as defined by the present claims. Applicant respectfully requests the reconsideration and withdrawal of the rejection of claims under 35 U.S.C. § 103(a).

VII. Conclusion

In view of the foregoing remarks, Applicant respectfully requests the timely allowance of the pending claims. Should the Examiner believe that any further action is necessary to place this application in better form for allowance, the Examiner is invited to contact Applicant's representative at the telephone number listed below.

The Commissioner is hereby authorized to charge to Deposit Account No. 50-1165 (T2332-11218US01) any fees under 37 C.F.R. §§ 1.16 and 1.17 that may be required by this paper and to credit any overpayment to that Account. If any extension of time is required in connection with the filing of this paper and has not been separately requested, such extension is hereby requested.

Respectfully submitted,

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